

Commercial vehicle collisions in Canada, 2012-2021

From: [Transport Canada](#)

This fact sheet summarizes key statistics on commercial vehicle collisions, the vehicles involved and the casualties in those collisions for the 10-year period between 2012 and 2021.

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Introduction

Commercial vehicles are an important part of Canada's transportation system. In 2021, there were more than 1.3 million registered commercial vehicles in Canada. While commercial vehicle collisions represented approximately 8% of the collisions on Canadian roads between 2012 and 2021, they made up approximately 20% of all road user fatalities.

This fact sheet summarizes key statistics on commercial vehicle collisions, the vehicles involved and the casualties in those collisions for the 10-year period between 2012 and 2021. It covers straight trucks, tractor trailers and buses, excluding school buses. In the sections where we discuss the overall trends over the 10-year period, we will also highlight the presumed effect of COVID-19 restrictions between 2019 and 2020, and the rebound period that followed between 2020 and 2021.

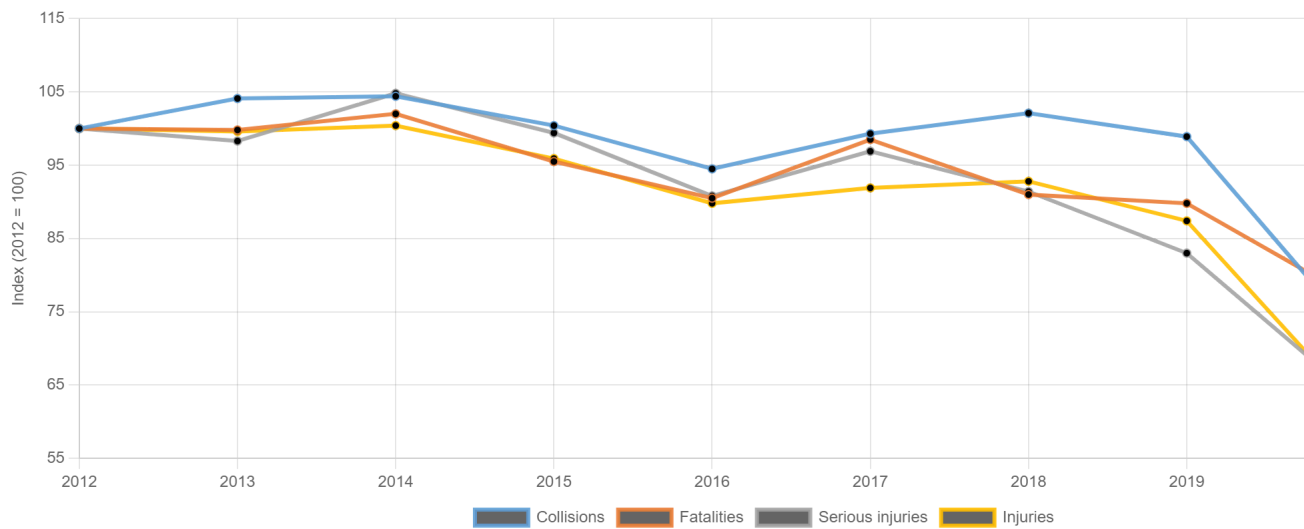
The main source of data is the National Collision Database (NCDB), a database of all police-reported motor vehicle collisions on public roads in Canada. Motor vehicle registrations data obtained from Statistics Canada ¹ and estimates of vehicle-kilometres travelled (VKTs) produced by Transport Canada are also used to look at collisions and casualties in the context of exposure.

Trends

Figure 1 shows that commercial vehicle collisions and casualties have been trending downward between 2012 and 2021, with larger decreases in 2020. These larger decreases are presumably due to the COVID-19 pandemic restrictions put in place in 2020 resulting in lower exposure due to reduced traffic. In 2021, there were still some COVID-19 restrictions, but not to the same level as in 2020. Thus, the numbers of collisions and casualties increased without returning to the levels seen in 2019.

In 2021, there were 36,031 commercial vehicle collisions, down 20% from 45,146 in 2012. This includes a 25% decrease between 2019 and 2020 followed by an 8% increase between 2020 and 2021. Between 2012 and 2019, the number of collisions was relatively stable, decreasing 1%.

Figure 1: Commercial vehicle collisions, fatalities, serious injuries, and injuries by year, 2012-2021



► [Text version](#)

The annual number of fatalities in commercial vehicle collisions dropped by over 14% between 2012 and 2021, from 400 to 343. Serious injuries dropped by almost 30%, from 1,151 to 810. This includes a 14% decrease in fatalities and a 22% decrease in serious injuries between 2019 and 2020, and increases of 11% and 9%, respectively, between 2020 and 2021. Total injuries have also decreased from 11,336 in 2012 to 7,761 in 2021, down 32%. This includes a 27% decrease between 2019 and 2020, followed by a 7% increase between 2020 and 2021.

Commercial vehicle exposure and involvement rates

While the numbers of commercial vehicle collisions and casualties have been decreasing, the number of registered commercial vehicles increased by 24%, from 1,052,825 to 1,310,063.

Therefore, the collision involvement rate per 10,000 registered commercial vehicles decreased from 429 to 275, down 36% between 2012 and 2021. This includes a 26% decrease from 2019 to 2020 and a 3% increase from 2020 to 2021.

The fatality rate per 10,000 registered commercial vehicles decreased from 3.8 to 2.6, down 32% between 2012 and 2021. The serious injury rate decreased from 10.9 to 6.2, down 43%. This includes a 14% decrease of the fatality rate and 23% decrease of the serious injury rate between 2019 and 2020, followed by increases of 4% and 3%, respectively, between 2020 and 2021. The injury rate decreased from 107.7 to 59.2 between 2012 and 2021, down 45%. This includes a 28% decrease between 2019 and 2020 and a 2% increase between 2020 and 2021.

The estimated number of VKTs increased by 30%, from 37.7 billion in 2012 to 48.9 billion in 2021. This includes a 27% increase between 2012 and 2019, followed by a 12% decrease between 2019 and 2020, and a 16% increase between 2020 and 2021.

The trends for the rates per billion VKTs are similar to those for the rates per 10,000 registered commercial vehicles, except that they continued to decrease between 2020 and 2021. This is due to the number of VKTs in 2021 recovering to a level similar to 2019, while collisions and casualties increased less in 2021.

The commercial vehicle collision involvement rate per billion VKTs dropped from 1,198 to 737 between 2012 and 2021, down 38%. This includes a 15% decrease between 2019 and 2020 and an additional 7% decrease between 2020 and 2021.

The fatality rate per billion VKTs dropped from 10.6 to 7.0 between 2012 and 2021, down 34%, while the serious injury rate dropped from 30.5 to 16.6, down 46%. The fatality rate decreased by 3% between 2019 and 2020 and another 4% between 2020 and 2021, while the serious injury rate decreased by 12% and 6%, respectively. The injury rate dropped from 300.7 to 158.8 between 2012 and 2021, down 47%. This includes a 17% decrease between 2019 and 2020 and another 7% decrease between 2020 and 2021.

In the fourth quarter of 2021, the average age of commercial vehicles was 11.6 years, down from 12.2 years in 2020. The average age of medium trucks (11.1 years for class 3-6 vehicles) was lower than that of heavy trucks (11.9 years for class 7-8 vehicles).

Data also shows that 65% of the commercial vehicles were straight trucks, 33% were tractor trailers and 2% were buses. Classes 3-6 vehicles (medium) represented 35% of commercial vehicles while classes 7-8 vehicles (heavy) represented 65% of commercial vehicles.

Commercial vehicle collision characteristics

Table 1 shows that there was an annual average of 7,711 commercial vehicle casualty collisions between 2012 and 2021, with averages of 3,604 straight truck collisions, 2,950 tractor trailer collisions and 1,297 bus collisions.

Among fatal commercial vehicle collisions:

- 39% were straight truck collisions
- 58% were tractor trailer collisions, and
- 6% were bus collisions

For commercial vehicle injury collisions:

- 47% were straight truck collisions
- 37% were tractor trailer collisions, and
- 17% were bus collisions

Straight truck, tractor trailer and bus collisions are not mutually exclusive because a collision may involve more than one of those vehicle types. Therefore, the sum of the numbers of commercial vehicle casualty collisions for each type may be higher than the total number of commercial vehicle casualty collisions.

Table 1: Commercial vehicle casualty collisions by vehicle type, 2012-2021

Year	Fatal collisions				Injury collisions			
	Straight trucks	Tractor trailers	Buses	Total	Straight trucks	Tractor trailers	Buses	Total
2012	143	197	21	351	3,741	3,103	1,575	8,290
2013	135	195	31	352	3,684	3,150	1,495	8,185
2014	134	211	23	358	3,711	3,216	1,408	8,167
2015	121	194	23	331	3,638	2,881	1,473	7,863
2016	117	193	19	323	3,416	2,817	1,338	7,458
2017	131	216	19	354	3,599	2,962	1,297	7,711
2018	124	190	23	322	3,639	2,800	1,280	7,593
2019	124	196	9	323	3,555	2,581	1,256	7,246
2020	119	158	13	280	2,789	1,964	797	5,449
2021	133	169	10	307	2,984	2,107	864	5,851
Total	1,281	1,919	191	3,301	34,756	27,581	12,783	73,813

Between 2012 and 2021, most commercial vehicle fatal and injury collisions involved two or more vehicles.

Among fatal commercial vehicle collisions:

- 20% were single vehicle collisions
- 63% were two vehicle collisions, and
- 17% were collisions involving more than two vehicles

For commercial vehicle injury collisions:

- 23% were single vehicle collisions
- 62% were two vehicle collisions, and
- 15% were collisions involving more than two vehicles

Among fatal commercial vehicle collisions, the most frequent configurations were:

- head-on collisions (30%)
- right-angle collisions (12%), and
- rear-end collisions (12%)

For commercial vehicle injury collisions, the most frequent configurations were:

- rear-end collisions (27%)
- other single vehicle collision configurations (11%), and
- right-angle collisions (10%)

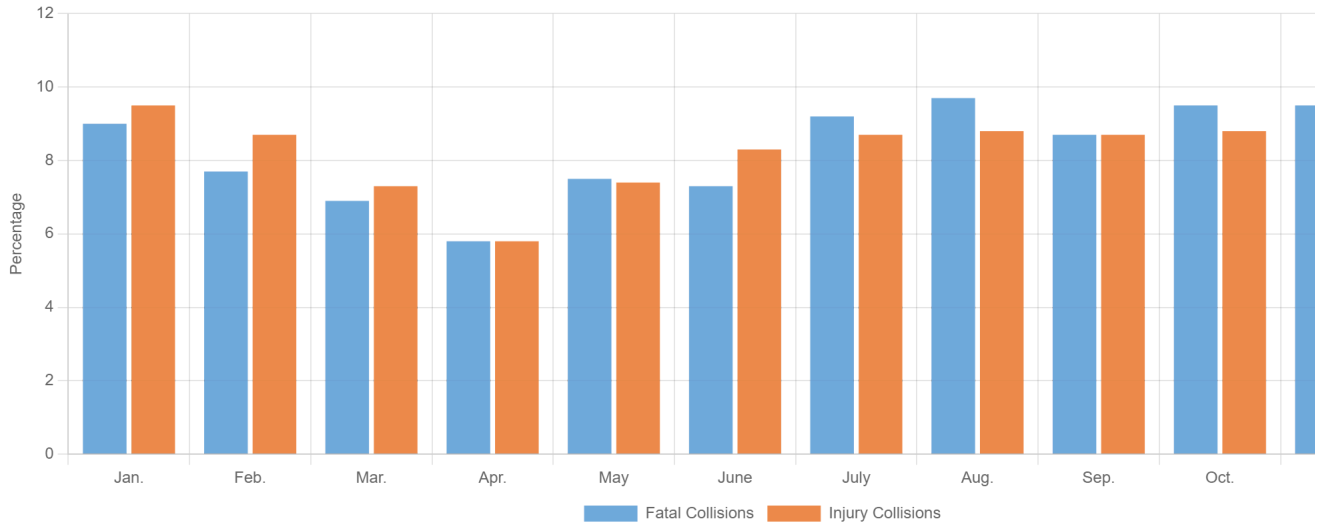
Most commercial vehicle fatal collisions (74%) were on rural roads, while the majority of commercial vehicle injury collisions happened on urban roads (56%).

Between 2012 and 2021, commercial vehicle collisions were much more likely to happen on weekdays than during the weekend. Among fatal collisions, between 15% and 18% happened on each weekday, 10% on Saturdays and 7% on Sundays. Similarly, for injury collisions, between 16% and 18% happened on each weekday, 8% on Saturdays and 6% on Sundays. This is consistent with historical trends of much higher commercial vehicle exposure on weekdays, which accounted for almost 90% of VKTs.

More than two-thirds of fatal commercial vehicle collisions (70%) and more than three-quarters of commercial vehicle injury collisions (78%) occurred between 6 am and 6 pm. The period between 12 pm and 6 pm was the highest risk period. Again, this is consistent with historical trends for commercial vehicle exposure, as more than 75% of VKTs occurred between 6 am and 6 pm.

Figure 2 shows that, on average, between 2012 and 2021, commercial vehicle fatal and injury collisions declined from January to April and followed an increasing trend for the remainder of the year, particularly for injury collisions. Fatal collisions peaked in August, October, and November while injury collisions peaked in January. A higher percentage of fatal collisions (56%) occurred from July to December as compared to injury collisions (53%).

Figure 2: Percentage distribution of fatal and injury commercial vehicle collisions by month from 2012 to 2021 (10-year average)



► [Text version](#)

Vehicle characteristics

Between 2012 and 2021, 52% of the vehicles involved in fatal commercial vehicle collisions were commercial vehicles:

- 19% were straight trucks
- 31% were tractor trailers, and
- 3% were buses

In the same period, 53% of the vehicles involved in commercial vehicle injury collisions were commercial vehicles:

- 24% were straight trucks
- 20% were tractor trailers, and
- 9% were buses

Almost three-quarters (74%) of the commercial vehicles involved in fatal collisions were going straight ahead at the time of the collision. Among other vehicle maneuvers, the most frequent were:

- slowing or stopping in traffic (7%)
- turning left (5%), and
- turning right (4%)

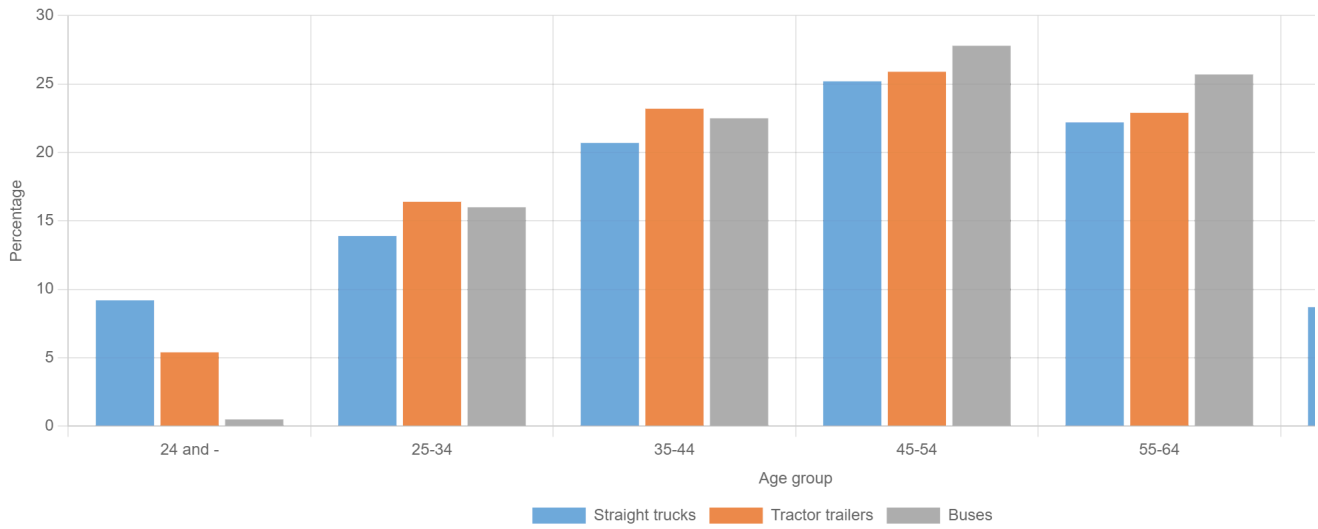
For injury collisions, 60% of the commercial vehicles were going straight ahead. The other most frequent vehicle maneuvers were:

- slowing or stopping in traffic (13%)
- turning left (7%)
- turning right (4%), and
- changing lanes (4%)

Commercial vehicle driver characteristics

Figure 3 shows that between 2012 and 2021, most commercial vehicle drivers involved in fatal collisions (71%) were between the ages of 35 and 64 years old. The 45-54 age group had the highest frequency (26%). Those results are consistent across commercial vehicle types, as 68% of straight trucks drivers, 72% of tractor trailers drivers and 76% of bus drivers involved in fatal collisions were 35-64 years old. The lowest frequencies of involvement in fatal collisions for straight trucks were for drivers 24 and under and 65 and older (9%), while the lowest frequency for tractors trailers was for drivers 24 and under (5%). Less than 1% of bus drivers involved in fatal collisions were 24 and under.

Figure 3: Commercial vehicle drivers involved in fatal collisions by age and commercial vehicle type from 2012 to 2021 (10-year average)

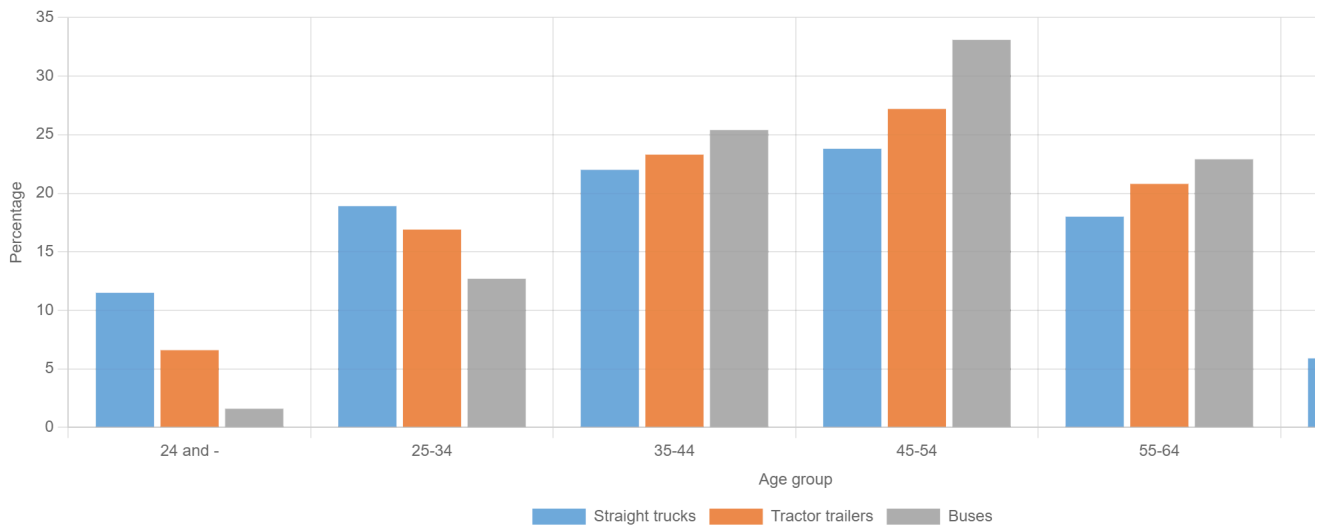


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Figure 4 shows that 70% of commercial vehicle drivers involved in injury collisions were between the ages of 35 and 64 years old. The 45-54 age group also had the highest frequency of commercial vehicle drivers involved in injury collisions (27%). Again, the results are consistent across commercial vehicle types. Drivers aged 35-64 years old accounted for 64% of straight trucks drivers, 71% of tractor trailers drivers and 81% of bus drivers involved in injury collisions. For straight trucks and tractor trailers, the lowest frequency of involvement in injury collisions was for drivers 65 and older (6% and 5%, respectively), while few bus drivers involved in injury collisions were 24 and under (2%).

While data on the demographics of the commercial vehicle driver population are not available, the distribution of that population by age group could explain in part the differences in the absolute numbers of collisions in each category.

Figure 4: Commercial vehicle drivers involved in injury collisions by age and commercial vehicle type from 2012 to 2021 (10-year average)



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Between 2012 and 2021, the police report did not identify any driver condition as a contributing factor for 95% of commercial vehicle drivers in fatal collisions and 96% of those in injury collisions. The most common driver conditions reported as contributing factors in fatal and injury collisions were:

- fatigue (1.5% in both cases), and

- being under the influence of alcohol (1.2% and 0.6%, respectively)

It is widely accepted that police-reported data tends to seriously underestimate the contribution of fatigue and fatigue-related inattention in collisions due to the lack of evidence to confirm this at the time of the collision report.

The police report did not identify any driver action as a contributing factor for 73% of commercial vehicle drivers in fatal collisions and 61% of those in injury collisions. The most common driver actions reported as contributing factors in fatal and injury collisions were:

- distraction/inattention (8% and 14%, respectively), and
- driving too fast for conditions (5% and 9%, respectively)

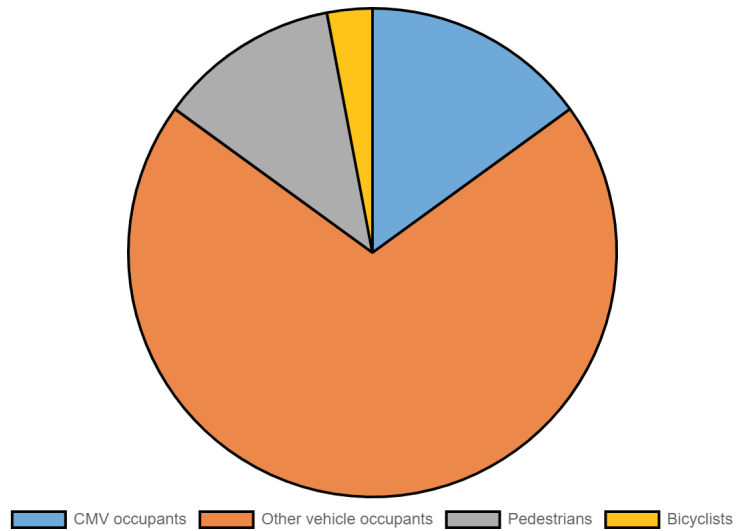
It is well documented that a significant portion of inattention problems are related to hypovigilance, the early signs of fatigue.

Characteristics of victims

Figure 5 shows that, between 2012 and 2021, of the fatalities in commercial vehicle collisions:

- 70% were occupants of other vehicles
- 15% were occupants of commercial vehicles
- 12% were pedestrians, and
- 3% were bicyclists

Figure 5: Fatalities in commercial vehicle collisions by road user type from 2012 to 2021 (10-year average)



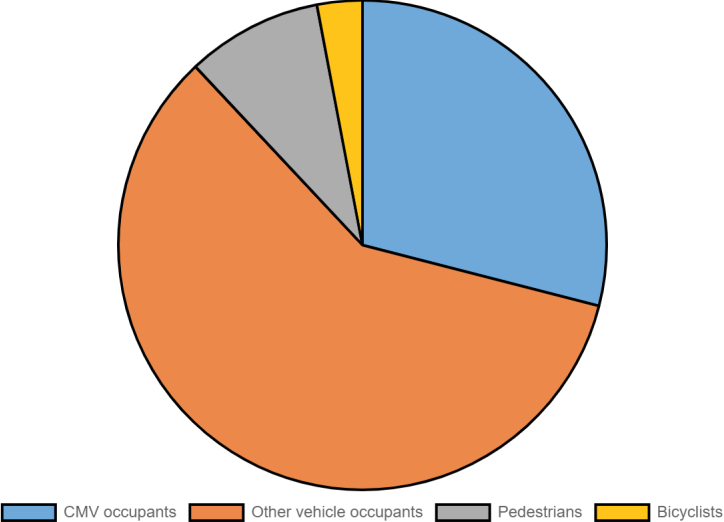
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Figure 6 shows that, of the serious injuries in commercial vehicle collisions:

- 59% were occupants of other vehicles
- 29% were occupants of commercial vehicles
- 9% were pedestrians, and
- 3% were bicyclists

The percentage of serious injuries that were occupants of commercial vehicles is almost twice as much for serious injuries as for fatalities.

Figure 6: Serious injuries in commercial vehicle collisions by road user type from 2012 to 2021 (10-year average)



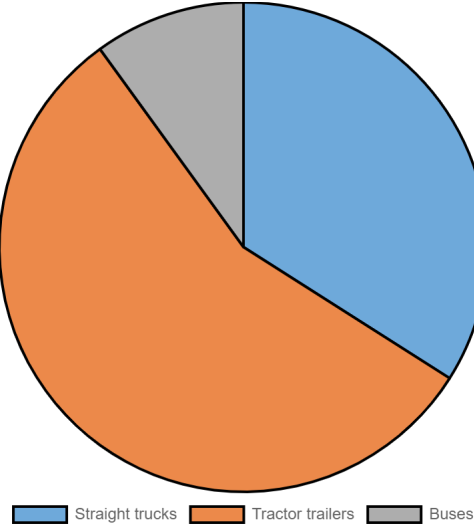
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Figure 7 shows that, between 2012 and 2021, among fatally injured commercial vehicle occupants:

- 56% were tractor trailer occupants
- 34% were straight truck occupants, and
- 10% were bus occupants

The distribution shows large variations from year to year, with the proportion of bus occupant fatalities oscillating between 0% to 25%.

Figure 7: Fatally injured commercial vehicle occupants by vehicle type from 2012 to 2021 (10-year average)



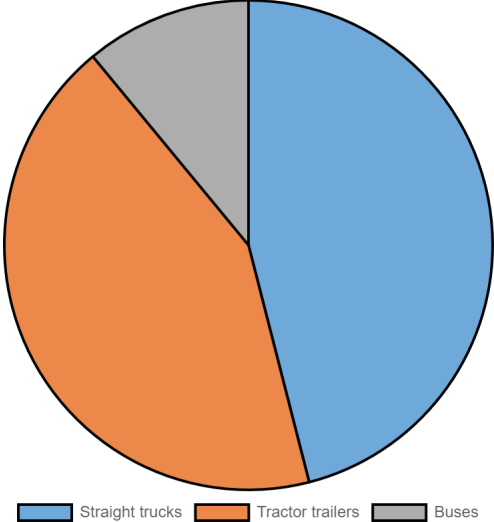
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Figure 8 shows that among seriously injured commercial vehicle occupants:

- 43% were tractor trailer occupants
- 46% were straight truck occupants, and
- 11% were bus occupants

The proportion of bus occupant serious injuries also varied from year to year, but to a lesser extent than for fatalities, oscillating between 6% and 19%.

Figure 8: Seriously injured commercial vehicle occupants by vehicle type from 2012 to 2021 (10-year average)



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Find more detailed motor vehicle collision data on the [National Collision Database \(NCDB\) On-Line tool](#).

1 Statistics Canada. [Table 23-10-0308-01 Vehicle registrations, by type of vehicle and fuel type](#)
